CURRICULUM VITAE
Tamara Gibson Kolda

Sandia National Laboratories
P.O. Box 969, Mail Stop 9217
Livermore, CA 94551, USA

tgkolda@sandia.gov
(925) 294-4769 / (925) 294-2234 (fax)
http://csmr.ca.sandia.gov/~tgkolda/

Research Interests

Numerical Analysis and Scientific Computing; research experience in Optimization, Information Retrieval, Computational Linear Algebra, Graph Theory, and Parallel Algorithms.

Education

- Ph.D., Applied Mathematics, University of Maryland, 1997. D. P. O'Leary, advisor. Dissertation: *Limited-memory matrix methods with applications.*
- M.A., Applied Mathematics, University of Maryland, 1995.
- B.S., Summa Cum Laude, Mathematics, University of Maryland Baltimore County, 1992.

Professional Experience

- Senior Member of Technical Staff (1999 – present), Computational Sciences and Mathematics Research Department, Sandia National Laboratories, Livermore, California.
- Householder Postdoctoral Fellow in Scientific Computing (1997 – 1999), Computer Science and Mathematics Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- Adjunct Assistant Professor (1997 – 1999), Department of Computer Science, University of Tennessee, Knoxville, Tennessee.
- Summer Intern (Summers 1994, 1995, 1996), Institute for Defense Analyses Center for Computing Sciences, Bowie, Maryland.
- Mathematician (Summers 1992, 1993), National Security Agency, Ft. Meade, Maryland.
- Teaching Assistant (Fall 1995), Department of Mathematics, University of Maryland, College Park, Maryland.
- Teaching Assistant (Spring 1991, Fall 1991, and Spring 1992), Department of Mathematics, University of Maryland Baltimore County, Catonsville, Maryland.

Refereed Journal Articles

- Tamara G. Kolda. *Orthogonal Tensor Decompositions.* SIAM J. Matrix Analysis, to appear.
- P. D. Hough, T. G. Kolda, and V. J. Torczon. *Asynchronous Parallel Pattern Search for Nonlinear Optimization.* SIAM J. Scientific Computing, to appear.
- John M. Conroy, Tamara G. Kolda, Dianne P. O'Leary, and Timothy J. O'Leary. *Chromosome Identification Using Hidden Markov Models: Comparision with Neural Networks, Singular Value Decomposition, Principal Components Analysis, and Fisher Discriminant Analysis.* Laboratory Investigation, 80(11):1629–1641, Nov. 2000.

- Tamara G. Kolda and Dianne P, O'Leary. *Computation and uses of the semidiscrete matrix decomposition.* ACM Trans. Math. Software, 26(3):416-437, Sept. 2000.
- Bruce Hendrickson and Tamara G. Kolda. *Graph partitioning models for parallel computing.* Parallel Computing, 26(12):1519–1534, Nov. 2000.
- Bruce Hendrickson and Tamara G. Kolda. *Partitioning sparse rectangular and structurally nonsymmetric matrices for parallel computation.* SIAM J. Scientific Computing, 21(6):2048–2072, May 2000.
- Tamara G. Kolda and Dianne P. O'Leary. *A semidiscrete matrix decomposition for latent semantic indexing in information retrieval.* ACM Trans. Information Systems, 16:322–346, 1998.
- Tamara G. Kolda, Dianne P. O'Leary, and Larry Nazareth. *BFGS with update skipping and varying memory.* SIAM J. Optimization, 8:1060–1083, Nov. 1998.

Refereed Conference Proceedings

- Bruce Hendrickson and Tamara G. Kolda. *Partitioning sparse rectangular matrices for parallel computations of Ax and $A'v$.* In Applied Parallel Computing in Large Scale Scientific and Industrial Problems: 4th International Workshop, PARA98, B. Kågström et al., eds., no. 1541 in Lecture Notes in Computer Science, Springer-Verlag, 1998, pp. 239–247.
- Tamara G. Kolda. *Partitioning sparse rectangular matrices for parallel processing.* In Solving Irregularly Structured Problems in Parallel: 5th International Symposium, Irregular'98, A. Ferreira et al., eds., no. 1457 in Lecture Notes in Computer Science, Springer-Verlag, 1998, pp. 68–79.
- Tamara G. Kolda and Dianne P. O'Leary. *Latent semantic indexing via a semi-discrete matrix decomposition.* In The Mathematics of Information Coding, Extraction and Distribution, G. Cybenko et al., eds., vol. 107 of IMA Volumes in Mathematics and Its Applications, Springer-Verlag, 1999, pp. 73–80.

Technical Reports, etc.

- Erica Chisholm and Tamara G. Kolda. *New term weighting formulas for the vector space method in information retrieval.* Technical Memorandum ORNL-13756, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 1999.
- Tamara Gibson (Kolda), Jennifer Hill, Christina Juergens, Sridar Pootheri, Laura Potter, and Shirley Stolarski, *Matching permuted variables in two or more data sets.* Tech. Rep. CRSC-TR96-7, Center for Research in Scientific Computation, North Carolina State University, Raleigh, North Carolina, 1996.
- T. Gibson (Kolda). *The NAS parallel conjugate gradient benchmark on the Cray T3D.* Technical Report SRC-TR-94-192, Supercomputing Research Center, Bowie, Maryland, 1994.

Software

- APPSPACK (C++ with PVM or MPI) - Asynchronous Parallel Pattern Search
- SDDPACK (C) - Semidiscrete Matrix Decomposition
- Modified L-BFGS (FORTRAN) - L-BFGS with update skipping and varying memory

Conferences & Workshops

- 2001 SIAM Annual Meeting (AN01), July 9–13, 2001, Town & Country Hotel, San Diego, CA. (Minisymposium.)
- AWM Workshop at the Joint Mathematics Meetings, New Orleans, LA, January 10-13, 2001. (Invited Panel Speaker.)
- IMA Workshop on Connecting Women in Mathematical Sciences to Industry, Minneapolis, MN, September 8-11, 2000. (Invited talk.)
- International Symposium on Mathematical Programming 2000, Atlanta, GA, August 7-11, 2000. (Parallel session.)
- 2000 SIAM Annual Meeting, Puerto Rico, July 10–14, 2000. (Minisymposium.)
- Bay Area Scientific Computing Day, Berkeley, CA, February 26, 2000. (Invited talk.)
- Joint Mathematics Meetings, Washington, D.C., January 19-22, 2000. (Special session.)
- Householder Symposium XIV, Whistler, British Columbia, Canada, June 14–18, 1999. (Plenary talk.)
- 6th SIAM Conference on Optimization, Atlanta, May 10–12, 1999. (Minisymposium.)
- 18th Annual Mathematics Symposium, Western Kentucky University, Bowling Green, Kentucky, November 20–21, 1998. (Invited address.)
- 5th International Symposium on Solving Irregularly Structured Problems, Irregular'98, Berkeley, August 9–11, 1998. (Contributed paper.)
- 1998 SIAM Annual Meeting, Toronto, July 13–17, 1998. (Contributed poster, contributed talk.)
- 4th International Workshop on Applied Parallel Computing in Large Scale Scientific and Industrial Problems, PARA98, Umeå, Sweden, June 14–17, 1998. (Contributed paper.)
- Association for Women in Mathematics Workshop: Focus on Reporting Research Results (in conjunction with 1997 SIAM Annual Meeting), Stanford University, July 13–15, 1997. (Minisymposium.)
- 1997 SIAM Annual Meeting, Stanford University, July 13–18, 1997. (Contributed talk.)
- Association for Women in Mathematics Workshop: Focus on Reporting Research Results (in conjunction with SIAM Annual Meeting), Kansas City, Missouri, July 22–23, 1996. (Contributed poster.)
- 5th SIAM Conference on Optimization, Victoria, British Columbia, May 20–22, 1996. (Contributed poster.)
- IMA Women in Mathematical Sciences Connected to Industry Workshop, Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis. February 23–25, 1996.
- The Industrial Mathematics Modeling Workshop for Graduate Students, Center for Research in Scientific Computation, North Carolina State University, August 7–16, 1995.

- National Science Foundation Research Experience for Undergraduates (REU) Summer Program in Matrix Analysis, College of William and Mary, Williamsburg, Virginia, Summer, 1991.
- National Physical Science Consortium Fifth Annual Meeting, La Jolla, California, October 3–5, 1994. (Invited talk.)

Invited Seminars

- Applied Mathematics Seminar, University of California Davis, February 22, 2001.
- Mathematics Department Colloquium, University of Maryland Baltimore County, Catonsville, Maryland, January 24, 2000.
- Computer Science Department Colloquium, College of William & Mary, Williamsburg, Virginia, January 17, 2000.
- Scientific Computing and Computational Mathematics Seminar Series, Stanford University, California, October 25, 1999.
- Colloquium in Vector and Parallel Computing, ETH, Zürich, Switzerland, March 9, 1999.
- Chalmers University of Technology, Göteborg, Sweden, March 5, 1999.
- Numerical Linear Algebra Group, Lawrence Berkeley Labs, Berkeley, California, January 15, 1999.
- Computer Science Department Seminar, Old Dominion University, Norfolk, Virginia, October 29, 1998.
- Research Seminar, Lucent Bell Labs, Murray Hill, New Jersey, April 1, 1998.
- CASC/ISCR Seminar, Center for Applied Scientific Computing, Lawrence Livermore National Laboratory, Livermore, California, February 26, 1998.
- Joint Computer Science and Mathematics Seminar, University of Tennessee, Knoxville, November 7, 1997.
- Numerical Analysis Seminar, University of Maryland, College Park, May 8, 1997.
- Applied and Computational Mathematics Division Colloquium, National Institute of Standards and Technology, Gaithersburg, Maryland, January 14, 1997.

Students

- Sarah Brown (graduate), University of Washington, Summer 2000
- H. Alton Patrick (undergraduate), North Carolina State University, Summer 2000
- Sarah Guske (undergraduate), Washington State University, Summer 1999
- Erica Chisholm (undergraduate), University of Delaware, Summer 1997

Honors and Awards

- Second runner-up for the SIAM Richard C. DiPrima Thesis Prize, 1998.

- Outstanding Poster Award for "Overview of the Semi-Discrete Decomposition and Its Applications" (with Dianne P. O'Leary), Sixth SIAM Conference on Applied Linear Algebra, 1997.
- Alston S. Householder Postdoctoral Fellowship in Scientific Computing, Oak Ridge National Laboratory, 1997.
- American Association of University Women (AAUW) M.A. Graduate Award, College Park chapter, 1995.
- National Physical Science Consortium (NPSC) Graduate Fellowship covering full tuition, fees, and stipend, 1992–1997.
- University of Maryland Supplemental Graduate Fellowship, 1992–1995.
- University of Maryland Baltimore County Class Salutatorian and Summa Cum Laude graduate, 1992.
- University of Maryland Baltimore County Dean's Scholarship, 1989, 1990, and 1991.

Professional Service and Committee Work

- Referee for *ACM Trans. Mathematical Software*, *J. Computational and Applied Mathematics*, *Linear Algebra and Its Applications*, *Optimization and Engineering*, *Parallel Computing*, *SIAM J. Matrix Analysis and Applications*, *SIAM J. Optimization*, *SIAM J. Scientific Computing*, *International Journal on Supercomputing Applications and High Performance Computing*.
- Secretary, SIAM Activity Group on Linear Algebra, 2000–present.
- Organizing Committee, 10th SIAM Conference on Parallel Processing for Scientific Computing, 2001.
- Web Editor and Executive Committee, Association for Women in Mathematics, 1998–present.
- External discussant at the licentiate seminar of Katarina Blom, Chalmers University of Technology, Göteborg, Sweden, March 4, 1999.
- Association for Women in Mathematics Workshop Co-Organizer, held in conjunction with the 1999 SIAM Annual Meeting, Atlanta, May 12–14, 1998.
- Chairperson, University of Maryland Women in Mathematics (WIM), 1993–1997.
- President, Pi Mu Epsilon Honor Society, University of Maryland Baltimore County Chapter, 1991–1992.
- Chairperson, University of Maryland Baltimore County President's Subcommission for Women in Science, 1991–1992.

Professional Societies

- American Mathematical Society (AMS)
- Association for Computing Machinery (ACM)
- Association for Women in Mathematics (AWM)
- Society for Industrial and Applied Mathematics (SIAM)